

ELECTRONICS

Replacing the OP-Amp Chip in Your SRI GC

Testing the OP80 or LF356 Amplifier Chip(s)

The parts kit in the plastic tackle box under the red lid of your SRI GC contains a spare OP80 or LF356 amplifier chip. Additional OP-Amp chips are available under SRI part number 8690-7000. FID, NPD, HID, TID, PID, FPD, and DELCD detectors use the OP-Amp chip. The OP-Amp chip amplifies the analog detector signal. You should replace a detector's OP-Amp chip when you're not getting the signal response that is otherwise consistently observed from your detector, when the detector signal is pegged up (5000mV) or down (0), or when the detector has failed the Wet Finger test.

If your detector signal is pegged up or down, try the following:

1. Turn OFF the GC power (for at least 10 seconds).
2. Shut down the PeakSimple software program.
3. Re-launch PeakSimple.
4. Turn the GC power ON.
5. Without zeroing the data system signal, observe the milliVolt reading. If it is still pegged at 5000mV, replace the OP-Amp chip. Sometimes the signal will be pegged at or near 0, but 5000mV is much more common with a faulty OP-Amp chip.



Wet Finger Test:

1. Make a "V" sign with the first 2 fingers of your hand.
2. Moisten those fingers (lick them).
3. Place one finger on the collector electrode, and simultaneously place the other on bare metal, like the column oven lid. Make your contact brief, and observe the milliVolt reading.
4. The data system signal should jump from 0 to 5000mV (max voltage), and come back down when you remove your fingers. If your contact does not produce a similarly significant change in the milliVolt reading, then you should replace the OP-Amp chip.



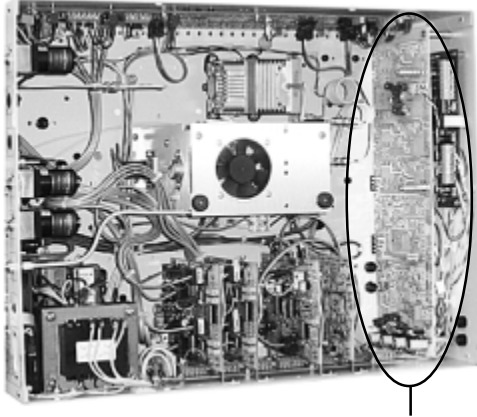
If you have dummy loads or the means to create them at your disposal, you may use the method outlined in the table below to test the OP-Amp chip(s). If the readings are not within the target range, you should replace the OP-Amp chip(s).

DETECTOR GAIN TEST		
DETECTOR(S)	DUMMY LOAD	TARGET GAIN(S) READINGS
FID / NPD / HID / TID	16000MOhm resistor connected to center of BNC jack and ground	HIGH (+2000mV), MED (100mV), HI FILT (+2000mV)
PID	16000MOhm resistor connected to center of BNC jack and ground	HIGH (+1000mV), MED (100mV), LOW (10mV)
FPD	16000MOhm resistor connected to center of BNC jack and ground	HIGH (+1000mV), MED (100mV), HI FILT (+1000mV)
DELCD	100MOhm resistor connected to red & white wire screw terminals	HIGH (+1400mV), MED (140mV), LOW (14mV)

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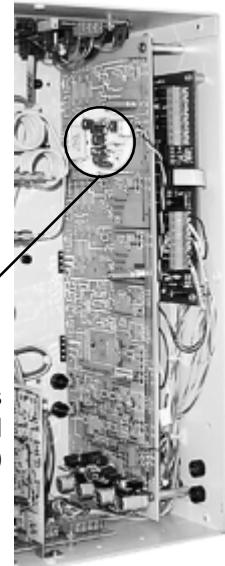
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Replacing the OP-Amp Chip



The amp board is the long board on the right hand side of the GC chassis interior

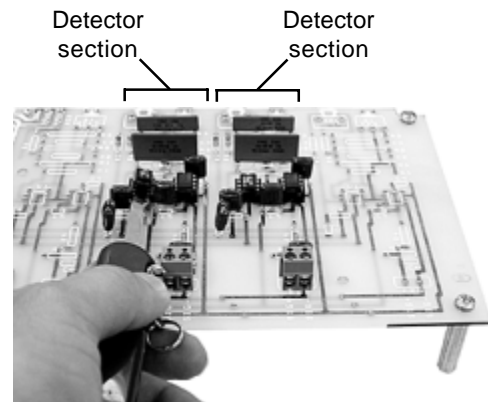
1. Turn OFF and unplug the GC.
2. Remove the 6 screws holding the bottom panel on the GC chassis. Support the panel while you gently rock the GC onto its back, then lower the panel to your working surface to access the chassis interior.
3. Locate the Amp board inside the GC chassis on the right hand side. Remove the protective steel plate by loosening the two thumbscrews that secure it to the aluminum stand-offs, and set it aside.



Pictured here is an amp board with two OP80 amp chips on it.

4. There are four possible places on the Amp board for the OP-Amp chip, depending on the detector to which it is assigned. From the top (or front, with the GC in normal operating position), the Amp board sections read FPD, FID, PID, and DELCD. If present, the NPD will be at the FID position, as would a TID if present. However, because the circuits are identical, this is just a general guide. The Amp board will be populated according to the detectors installed on the GC. Note that each circuit has a pair of chips, almost identical in appearance, installed side by side; the OP-Amp chip is the one on the left.

5. Use a small flat blade screwdriver or similar tool to pry the OP-Amp chip out of its socket and off the Amp board. (A pocket knife nail file was used in the picture).



OP80 Amp Chip

Marker



6. Note the semi-circular depression on one end of the OP-Amp chip; this is a marker for proper orientation of the chip, and it corresponds with a similar mark on the socket. The end of the chip bearing the marker faces the top of the amp board, so you will install it with that end facing away from you. Carefully position the chip over the socket so that each of the eight pins occupies a hole and press it into place.

7. Test the new OP-Amp chip with the methods described on the previous page.